

Amendments to the Specification

Please amend paragraph three of the Background of the Invention as follows:

As is shown in Figures 1 and 2 in the accompanying drawings that illustrate one release or laying phase of a group of stacks 4 of thermoformed objects 5 drawn from a stacking device and located in cages of hooking rods 3 provided with supporting retractable hooks or spikes 6, laying of the stacks can occur either onto a plane (fixed or movable) p ~~[[--]]~~ (See Fig. 1) ~~[[--]]~~ or onto a plate p having a series of vertical guides g for locating stacks ~~[[--]]~~ as shown in Fig. 2. As a matter of fact, breaking down of the stacks occurs rather frequently since some thermoformed objects 5 can become arranged in an untidy way between the hooking rods 3 during release thereof, which can result in uncomplete release of the stacks or in release and laying of untidy stacks that would create quite serious problems, as will be easily understood, in successive handling operations of the stacks.

Please amend the first three paragraphs of the Summary of the Invention as follows:

The main object of the present invention of the present invention is to provide a handling apparatus for groups of stacks which can assure keeping of the correct axial ~~alignement~~ alignment of the single stacks as well as their mutual spacing while being transferred from a stacking or stack storing station to a stack receiving or release station.

Another object of the present invention is to provide a handling apparatus for stacks of thermoformed objects ~~which~~ that is of high efficiency and practical use so as to be suitable to operate in synchronization and within cycle times of a thermoforming machine.

These and other objects which will be better apparent hereinafter are attained by a handling apparatus for groups of thermoformed objects constantly held in a correct axial alignment according to the present invention, which apparatus includes at least one picking pick up [[-]] release head having as many receiving seats extending parallel to one another from said head as are the stacks to be handled, and a drive apparatus means arranged to move a respective pick up and release head between a stack drawing station and a stack release station of one or more stacks of thermoformed objects and to position it correctly both at the said stack drawing station and at the said release station, and is characterized in that it comprises at least one mobile pusher member arranged to be moved between, and parallel to, the said receiving seats in order to engage at the top thereof the stacks of thermoformed objects located in each receiving seat, and control drive means for each mobile pusher member, thereby following and hold down each stack while the same is being released from its respective receiving seat.

Please amend paragraph two of the Brief Description of the Drawings as follows:

Figures 1 and 2 each show each a detail on enlarged scale of a pick up or drawing and transfer head in accordance with the prior art and some typical breakdowns in stacks while being released from the hooking rods;

Please amend paragraph 7 of the Brief Description of the Drawings as follows:

Figures 10 to 16 are each a diagrammatic perspective view of a pick up head of an apparatus according to Fig. 4 and show the operating sequence of ~~of~~ a release and laying of a plurality of stacks of thermoformed objects onto an equipped plate; and

Please amend the first six paragraphs of the Description of the preferred embodiments as follows:

With reference first to Figures 3 to 5, it will be noted that a handling apparatus for stacks 1 of thermoformed objects according to the present invention comprises a moving pick up-release head 2 having a plate 2a equipped with six groups of four hooking rods extending downwardly parallel to one another from the plate 2a. Each group of hooking rods 3 delimits a receiving seat arranged to locate and support a respective stack 4 of thermoformed objects, e.g. lids 5, as is shown in the drawings. Each hooking rod 3 is provided at its lower free end with a retractable hook 6, ~~e.g. which may be~~ pneumatically remotely controlled to come out from, and retract into, its respective rod, as is well known in the art.

In Figure 3 the plate 2a is upwardly secured, e.g. bolted, to the free end of a overhanging support arm 7, which in turn is supported on the top, e.g. keyed, of a vertical output shaft 8 mounted for rotation in a support case 9, which preferably also locates a reversible motor-~~[[]]~~reduction gear group (not shown in the drawings, but ~~and~~ of any suitable type). The support case also locates a vertically raising-lowering device (not shown in the drawings, e. g. a double acting jack) arranged to cause the overhanging arm 7, and thus the pick up-release head 2, to raise ~~[[-]]~~ and lower vertically. The prearranged and combined

motion of rotation and the raising-lowering motion results in the support arm 7 causing, in use, the pick up-release head 2 to move between a picking up station, e. g. at a stacking device 10 (see Fig. 4) for picking up a plurality of stacks 4 of thermoformed objects 5 and a release station where the stacks 4 of thermoformed objects are laid, such as onto a flat tape 12 of a tape conveyer 13 shown in Fig. 3.

In the embodiment illustrated in Fig. 4 the plate 2a of the pick up and release head 2 is secured underneath a support frame 14 which is supported, e.g. in an overhanging fashion, by a pair of sliding guides 15, that in turn are carried by a fixed U-shaped crosspiece 16. The frame 14 can be driven to effect to and fro movements or strokes between a stack pick up station 10 and a stack release station 17 by means of a linear actuator, e. g. of the type comprising a screw 18 driven by a reversible motor-reduction gear group 19 and nut screw 19a formed or secured to the frame 14.

Moreover, the plate 2a can effect straight vertical movements owing to the action of a linear actuator, e. g. comprising a pneumatic double acting cylinder and piston group 20, which is arranged to lower and lift the plate 2a at the pick up station 10 and the release station 17.

Both in Figure 3 and Figure 4 among the hooking rods 3 there is provided one or more moving pushers 21, e. g. in the form of a grid or frame mounted or supported in such a way as it can move parallel to the hooking rods 3 in order to engage the top of the stacks 4 of thermoformed objects 5 being located within each group of hooking rods 3. To this end, a suitable drive means is provided, e. g. a pair of double acting pneumatic jacks 23, arranged to transmit to the pushers a controlled movement to pursue the stacks 4 of thermoformed objects 5 while the same are being released at the stations 12 or 17.

Figures 6 to 9 show the operational sequence followed by the pick up and release head 2 illustrated in Fig. 3 while releasing or unloading stacks 4 of thermoformed objects 5 carried by it. Once the head 2 has been transferred (or while being transferred) onto the receiving surface 12, the pushing frame 21 is moved to rest on top of the stacks 4 of thermoformed objects 5 located in the head 2, then the plate 2a is lowered through the arm 7 by the raising-lowering device seated in the case 9 until the tips of the hooking rods 3 are resting on, or very near to, the receiving surface 12 (see Fig. 7). At this point, the plate 2a with its respective hooking rods 3, owing to the returning action of the raising-lowering device in the case 9, begins to raise, whereas at the same time the hooks 6 are controlled to retract into their respective hooking rods 3 and the pair of jacks 23 pushes the frame 21 to pursue the stacks 4 and hold them suitably pressed downwards, while the stacks slip off the hooking rods 3 owing to the raising movement of the plate 2a to come to rest on the receiving surface 12 and to keep each stack packed until the hooking rods are fully pulled off (see Fig. 8); after which the frame 21 is lifted by the jacks 23 (see Fig. 9) and the head 2 is moved away from the release station 12 to return to station 10 to be loaded with another group of stacks 4 and to restart the operation cycle.

Please amend paragraphs nine and 10 of the Description of the preferred embodiments as follows:

The operation sequence of the handling apparatus according to the present invention, framed as shown in Fig. 4, is illustrated in Figs. 10 to 16 according to distinct operational ways, will explained hereinbelow. The head 2 is vertically transferred above the equipped

plate 30 located at the release or unloading station 17. The frame 31, while the head 2 is being transferred or immediately after the same has arrived above the plate 30, is lifted towards the head 2, ~~as is shown~~ in Fig. 10.

According to a first way of unloading (see Figs. 10 to 13) the head 2 carries lengths 4a of stacks to be unloaded onto the plate 30, and thus the frame 31 is moved to a lifted position to receive the lengths 4a, whereas the head 2, within which in the mean time the frame 21 has moved to a rest position onto the stacks lengths 4a, is lowered by the jack 20 until the lengths 4a rest onto the frame 31 underneath (see Fig. 11). At this point the frame 31 is lowered towards an intermediate position, whereas the jacks 23 push the frame 21 downwards so as to hold down the stack lengths 4a well packed (Fig. 12), after which the head 2 is raised and can return to the pick up station 10 to be loaded with a second group of stack lengths 4b and to be then transferred, owing to the drive action of the motor 19, above the plate 30 (Fig. 13), where, in the mean time, the frame 31 is in a standby condition in its intermediate position corresponding to the height of the coming lengths 4b which are then unloaded with the above described procedure onto the lengths 4a under the pushing action of the frame 21 so as to complete the stacks 4 (Fig. 14).

Please delete paragraph 19 of the Description of the preferred embodiments as follows:

~~Any reference sign following technical features in any claim has been provided to increase intelligibility of the claim and shall not be construed as limiting the scope of the claim.~~